

**The U.S.-Canada Border:
Cost Impacts, Causes, and Short to Long Term Management
Options**

by

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EXECUTIVE SUMMARY

This report summarizes the results of a research project aimed at estimating the costs of border crossing transit time and uncertainty, and other border related costs, and their impact on the U.S. and Canadian economies. Secondary objectives related to developing an understanding of changes in traffic levels over time, understanding immediate post 9/11 impacts, and understanding the causes of extended border crossing times, and possible short term and long term solutions to the problem of extended transit times and uncertainty over those times. One long term solution, “an external perimeter” strategy is examined in light of the cost savings that would be possible, and in terms of possible benefits that might accrue from such a border management system.

The findings reported on here are based on a review of some 750 newspaper articles in 43 newspapers in both Canada and the U.S., a review of 45 border related reports, some 20 site visits to seven key crossings, and 173 interviews of manufacturers, carriers, brokers, trade associations, and other stakeholders. A key source for estimating primary inspection transit times (backup times) across the border for travel by autos and for trucks, for each direction of travel, was the Canada Customs archive of transit times. This archive was available for each of the key crossings, and allowed for detailed estimates of border crossing times along the entire U.S.-Canada border. Transit time data, site visits, and interviews took place during the summer of 2002, however, additional data was gathered for both the pre and post 9/11 time periods depending on the topic under study.

The key finding is that the present border management system and trade policies are costing the U.S. and Canadian economies an estimated US\$7.52 to 13.20 billion, with a most likely cost estimate of US\$10.3 billion. These costs relate to specific costs to carriers and manufacturers resulting from border transit times and uncertainty, other border related costs borne by manufacturers and carriers for duties, broker fees, customs administration, etc., and costs for inspection staffs borne by the two governments. The total costs represent 2.70% of merchandise trade totaling US\$382 billion in 2001. After adjusting out non-truck related costs, the total border costs related to trucking are estimated at US\$9.45 billion at the midrange, or some 4.02% of total truck trade totaling US\$270 billion in 2001. In addition to these quantified costs, the report examines a number of societal impacts of the border related to congestion, environmental issues, truck safety, and the need for immediate investment dollars.

Other key findings relate to changes in traffic levels long term, and pre 9/11 to post 9/11. Volume changes from 1984 to 2001 and from 1995-2001 are presented in the report. For the 9 months from September to June pre 9/11, compared to the same months post 9/11, auto traffic into the United States fell 14.98% border-wide, and truck traffic fell 2.19%. During this time period industrial production in the U.S. was down 3.66%, while auto production was actually up, however, imports to the U.S. from Canada were down by 10.8%. This suggests that U.S. buyers had some concerns about buying from Canada, perhaps in part because of real or perceived concerns about current and/or future border conditions. Several other macro indicators of a border effect were reviewed, including an examination of cross-border freight rates which suggests these charges are US\$1.59 billion higher than would be the case for comparable domestic freight movements.

A final category of findings address the causes of extended transit times for entry to the U.S. Backups continue to be due to a combination of factors, including those related to a lack of sufficient federal inspection service (FIS) inspection booths at high volume crossings, an inability to staff all booths at times of high volumes due to a lack of staff, and a variety of problems with participation in and the

effectiveness of secondary yard processes for trucks. However, the single largest problem continues to be, as was the case pre 9/11, an inability to staff all available booths at times of backup incidents. While there has been progress on this issue since 9/11, and all available truck booths are being staffed much more frequently than pre 9/11, most delay incidents observed during our site visits occurred when not all booths were being staffed.

Possible solutions are categorized into short to medium term ones, and long term ones. Short to medium term solutions should focus primarily on increasing FIS staff levels, a process that is well underway, and procedures to make sure that both primary and secondary inspection facilities are adequately staffed, and that such staffing is augmented when backups due begin. It will also be necessary to increase the number of primary inspection booths at some crossings, given the longer processing times than were typical pre 9/11, and likely increases in traffic in the future. At a few crossings, with downtown city truck routes, such as at Calais-St. Stephens and at Detroit-Windsor, it will also be necessary to consider new access/egress routes that can help alleviate backups on city streets. Finally, much more needs to be done to increase participation in existing programs that allow carriers to avoid secondary, and more needs to be done to improve execution of these programs by brokers, drivers, and other stakeholders. Driver education is a major problem that needs considerable work.

Long term, there are two approaches to dealing with the U.S.-Canada border. One approach is to invest in sufficient new border crossings and staff to facilitate trade and maintain border security. This could mean upwards of several billions of dollars for facilities and ongoing FIS staff needs. While these investments could help facilitate trade, there is some question about the degree of security that can be provided on a border between two countries with this level of economic integration and cross-border trade and transportation. Efforts to increase security, including various new controls on travel by non-nationals, and proposals for various advance notices of freight movements, could impede commerce regardless of the level of investment in facilities and staff at key guarded crossings.

One alternative that has gained considerable attention in Canada is the concept of an “external perimeter” approach to the border between the U.S. and Canada. The most advanced version of this approach would result in border inspections being conducted on the U.S. and Canada’s external borders, with a change in emphasis on the internal border to one of random inspections and post audits with severe penalties for violations of each countries laws and/or trade policies. Such a system, would of course require Canada to more closely integrate its immigration policies with those of the United States. In addition, such an approach would provide additional incentives for the U.S. and Canada to further integrate trade policies. The benefit from such an approach would be potential elimination of most of the US\$10.3 billion in cost impacts from the current system, a savings equal to 2.70% of the value of all current merchandise trade.

INTRODUCTION

The U.S. and Canada are the world's two largest trading partners and experienced rapid growth in trade volumes over the last decade. And while much of the trade growth can be traced to the NAFTA and predecessor U.S.-Canada FTA, the NAFTA itself did little to liberalize or modernize border crossing processes. In fact, while the border is often referred to as the longest undefended boundary in the world, many of the trade, immigration, and border control policies that the two countries employ are rooted in age old concepts that were originally designed to collect duties of various kinds and control the flow of investment and peoples. These policies and processes had a significant cost impact on the economies of the two countries prior to 9/11, and these cost impacts have increased since border security was tightened post 9/11. This tightening of the border has led to longer transit times, and more importantly, an increase in uncertainty about the time that border crossings will take.

The primary purpose of this report is to document the specific costs of the border related to transit time and uncertainty, and to document other general costs related to border trade policies and procedures. An understanding of these costs will be important in estimating the benefits that would accrue from any possible changes in the way the border is managed in the future. The report also addresses the impact of 9/11 on traffic and trade levels, and examines several macro indicators of border impacts related to tourism levels, freight rates, and assumed crossing time costs. The last objective is to report on the causes of extended border crossing transit times, and to suggest possible short term and long term solutions that could lower these costs and speed the flow of traffic while enhancing security. One such alternative, an "external perimeter" strategy, is considered in the last section of the report focusing on major implications of this work. Problems with the present border managements system, and the potential benefits of a long term shift in strategy towards the "perimeter" model are considered in this section.

This report follows in the steps of a number of initiatives designed to improve border operations and improve international cargo security. These steps have included moves towards inspections at first points of entry to North America for ocean freight, and a number of initiatives to increase staffing at the borders. Additional initiatives have been aimed at speeding the flow of cargo and traffic for frequent travelers, and for secure importers, exporters and carriers that are responsible for the vast majority of cargo movements. At the same time, numerous reports have noted the difficulties travelers and carriers have encountered at the border as a result of stepped up security and a shortage of federal inspection services (FIS) staff. The purpose of this report is not to highlight these problems, or to add another voice of criticism to overburdened FIS. Instead, the purpose of the report is to document the costs of the border overall, to provide insights into the ways in which border policies and uncertainty over border crossing times can affect the economy, and to explore alternative border management strategies such as the "external perimeter" one.

The full report consists of this executive summary and overview, summary tables, and a set of more detailed appendixes included at the end of this overview. These appendixes cover a variety of topics, but most importantly include the detailed calculations of both macro and detailed cost impacts. The appendixes are numbered from I-X and include the following sections:

- Appendix I - Objectives, Analysis Outputs and Methodology
- Appendix II - Sources and Interviews
- Appendix III - Traffic Volume Changes

Appendix IV - Economic, Trade and Traffic Changes Pre to Post 9/11
Appendix V - Immediate Post 9/11 Impact
Appendix VI - Macro Level Border Impacts
Appendix VII –Primary Inspection Transit Time Data
Appendix VIII- Detailed Cost Impact Discussion and Calculations

U.S.-CANADA TRADE AND TRANSPORTATION LEVELS

Trade Levels

Trade between the U.S. and Canada is of course the largest bilateral trading relationship in the world, with 2000's total trade in goods, services and income of US\$489 billion being some 52% greater than the trade with the U.S.'s number two trade partner – Japan (Canadian Embassy 2001). U.S.-Canada total trade has grown by 152%, or 13.8% per year since implementation of the U.S.-Canada Free Trade Agreement in 1989. U.S. exports of goods to Canada totaled US\$178.9 billion in 2000, or some 23% of all U.S. exports. The U.S. market is even more important to Canada's economy, with exports to the U.S. in 2000 totaling US\$230.8 billion and representing 87% of all Canadian exports. Trucks moved 72.6% of the value of exports from the U.S. to Canada, and 55.4% of the value of goods moving from Canada to the U.S. The U.S. and Canada are also major sources of foreign direct investment for each other, with US\$227 billion invested in each other's countries at the end of 2000.

For 2001, merchandise trade alone, excluding services and income flows, totaled US\$382 billion. This trade included US\$218 billion in U.S. imports from Canada, including US\$35 billion in energy. At the same time, U.S. exports to Canada totaled US\$164 billion. Truck borne trade alone, in both directions, totaled US\$235 billion in 2001, with US\$117 billion in goods imported to the U.S. by truck and US\$118 billion exported to Canada by truck. The total land borne merchandise trade was concentrated at several key ports, with Detroit-Windsor accounting for US\$91.9 billion of the two-way trade total. The Buffalo-Niagara frontier accounted for another US\$60.3 billion of the total, while Sarnia-Port Huron accounted for an additional US\$55.5 billion. Together, these three ports represent 59.9% of all land borne merchandise trade between the U.S. and Canada. Focusing just on truck borne trade, Detroit-Windsor trade totaled US\$79.7 billion, Buffalo-Niagara totaled US\$47.1 billion, and Sarnia-Port Huron totaled US\$29.8 billion. These three ports accounted for 66.7% of all truck borne trade.

Traffic Levels

This trade, investment, and personal travel results in a great deal of border crossing traffic. In 2001, 68.3 million personal vehicles crossed the U.S.-Canada border along with 13.4 million trucks. See Table 1 for summary details by key crossing and in total, and see Appendix III for additional detail. Personal vehicle travel was down a cumulative 11.89% from a peak of 77.5 million units in 1995, primarily because of an abnormally large volume of traffic in the mid 90's due to a stronger Canadian dollar, and high cigarette and gas taxes in Canada. Since 1995 the Canadian dollar has weakened and the provinces made major reductions in cigarette taxes. Personal vehicle traffic was up a cumulative 24.9% between 1984 and 2001. Commercial traffic grew 29.7% between 1995 and 2001, and 122.5% over the 17 years since 1984. To put this traffic volume into perspective, consider that personal vehicle traffic in 2001 averaged 7,799 units per hour over a 24 hour seven day a week year. Truck traffic averaged 1,526 units per hour over a 24X7 year.

Table 1 also points out the extreme concentration in traffic at several key crossings, and the extensive growth in traffic at these crossings. For instance, out of 130 border crossings, the four Ontario-Michigan crossings accounted for 35.9% of the northern border's total bidirectional truck traffic in 2001, and the Peace Bridge and Lewiston-Queenston Bridges in the Buffalo-Niagara area accounted for another 17.2% of the total. Truck traffic at Windsor-Detroit has grown 133.2% since 1984, by 86.6% at Niagara crossings, and by 446.5% at the Sarnia-Port Huron crossing. Traffic at the key Pacific Highway crossing between Washington and British Columbia grew by 152.0%.

It is important to note that the bulk of the truck traffic, with the exception of the Pac Highway crossing, crosses the border at locations that turn out to be key points for auto traffic as well, further congesting these crossings and straining the capacity of the existing bridges and tunnels over the river way border between the U.S. and Canada in these regions. In 2001, the 15.3 million autos crossing at the two Detroit-Windsor crossings represented 22.4% of total border traffic, with an average daily flow over a 365 day year of 41,918 autos per day, or 1,747 autos per hour over a 24 hour day. The four crossings at the Niagara frontier generated an additional 14.2 million bidirectional crossings, or 20.8% of total northern border auto crossing activity. In total, these six crossings account for 43.2% of all auto crossings at the northern border's 130 ports of entry. This concentrated volume of truck traffic at equally congested auto crossings points out some of the problems in trying to increase border security without leading to major delays and uncertainty that could have the effect of reducing trade and transportation.

U.S. Economic Activity, Imports From Canada and Inbound Truck Traffic Pre to Post 9/11

While trade and truck traffic grew substantially over the 90's, there has been a significant slowdown in Canadian exports to the U.S. since 9/11 and a slight reduction in truck traffic. Figure 1 shows U.S. economic activity, imports from Canada by land, and inward truck moves for the entire U.S.-Canada border for each of nine months pre-9/11 compared to the same nine months post 9/11. On a cumulative level, while the U.S. industrial production index was down 3.66%, and auto production was actually up 4.24% in the U.S., imports of goods by land from Canada fell 10.8%, and truck traffic entering the U.S. fell 2.2%. This fall-off in Canadian exports to the U.S. by land will be of considerable concern in Canada where a number of trade associations, such as the Canadian Association of Manufacturers and Exporters, have expressed fears that post 9/11 perceptions of border delays and uncertainty might have the effect of reducing exports to the U.S. (MacFarlane 2001, Dobson 2002, Lawson 2002, The Windsor Star 2002,). Given that economic activity in the U.S. over the nine month period was flat to up, and that the Canadian dollar value was relatively flat over this period, one would have expected imports from Canada to have fallen by no more than 3-4%. The fact that they fell 10.8% may in part be due to U.S. industrial buyer's concerns about the nature of the border now and in the future.

While actual border transit times are not dramatically longer than they were pre 9/11 there has been considerable publicity about border problems immediately after 9/11, and there is greater uncertainty today over the time it will take to cross the border. In addition, there has been considerable press about the need to "secure" the northern border, and this may have led to buyers having some qualms about using Canadian sources. Border crossing processes and procedures, and their costs, were coming under scrutiny pre-9/11 (Kenna 2001, National Post 2001, Tricky 2001) and have received much more attention in recent months.

Appendix IV provides additional information on changes in economic activity, trade, and traffic pre to post 9/11. Several figures graphically depict changes in the U.S., including inbound imports and traffic, and changes in Canada including imports and traffic entering Canada. Both truck traffic and auto traffic changes are depicted.

METHODOLOGY

In conducting this research a combination of secondary source reviews and site visit/personal interviews were used. These sources are summarized in a bibliography to this summary report, and in Appendix II. This information was used to make a variety of findings related to causes and solutions to border issues. The information gathered in these reviews was also used, along with a variety of assumptions, to identify categories of cost impacts at both the macro and detailed levels, and to make cost estimates for each category of potential costs. Examples of specific cost impacts at the detailed level include primary booth transit time (backups), secondary inspection yard processing time, reduced cycles for carriers, lost productivity from reduced trade, higher inventory carrying costs, customs administration costs, brokerage costs, payment of duties, and federal inspection services (FIS) staff costs.

The secondary source review included identification, analysis and categorization of cost impacts from a review of some 750 newspaper articles on border issues. These articles appeared in 25 Canadian and 18 U.S. newspapers that were reviewed. Other secondary sources included some 45 border management reports on the overall border crossing environment or on specific border crossings, and several previous studies on the extent of and costs of border transit times. Key reports that were used are summarized in the References. In addition several key secondary sources of data on trade, traffic, tourism, and transit time were used. These key sources included Bureau of Transportation Statistics reports on U.S.-Canada trade by year and month, U.S. Customs Service reports on monthly and annual traffic flows into the U.S., Statistics Canada reports on vehicle traffic entering Canada by year and month, and Canada Customs archives on border primary inspection transit times for commercial and passenger vehicles entering Canada and the U.S.

In addition, in order to gain a better understanding of the nature of various border crossings and to better understand the extent of transit time and uncertainty, a series of site visits to key border crossings were conducted during the summer of 2002 in order to make observations and conduct interviews. The seven key border crossing frontiers at Champlain, NY-Lacolle, Ont (and Vermont crossings); Niagara Falls, Ont.-Niagara Falls, NY (three crossings); Buffalo, NY-Fort Erie, Ont.; Windsor, Ont.-Detroit, MI (two crossings); Port Huron, MI-Sarnia, Ont.; Emerson, MT-Pembina, ND; and Douglas, BC-Blaine, WA (four crossings visited) were visited. Based on these site visits and other sources, a total of 173 personal and/or telephone interviews were conducted in order to assess the impact of border transit time and other border related costs. These interviews were conducted with manufacturer, carrier, broker, trade development, and trade association organizations and are detailed in Appendix II.

PRIOR STUDIES OF BORDER TRANSIT TIME AND COST IMPACTS

While there are no known studies of border-wide transit times since 9/11, there was one pre 9/11 study that examined the extent of primary inspection truck transit times (backup time). This work by Battelle and the Texas Transportation Institute studied four key crossings on the northern border pre 9/11 for

periods of 2-3 days on two separate occasions (Battelle 2002). The researchers studied primary inspection transit times only (secondary inspection yard processing times were not considered), and considered only transit time in excess of typical cycle times at the lowest hourly volume time periods. They reported average inbound (to USA) delay transit times to be 16.0 minutes, and average outbound (to Canada) delay transit times to be 8.1 minutes. Interestingly, they found the fewest delay transit times at the Ambassador Bridge between Detroit and Windsor, the busiest crossing on the border, and the one that has generated the most press reports about long transit times both before and after 9/11. The strength of this study was in the detailed hour by hour analysis of primary delay transit times over a few days, however the weakness is in the very limited number of crossings studied, and the small number of days in the sample. Nor did this study convert the delay transit times into cost impact estimates. There has also been a post 9/11 effort to quantify the cost of transit times and uncertainty on Canadian trucking companies. The study, conducted by KPMG Canada, suggested that the direct costs to the 31 Canadian firms that were surveyed totaled C\$350 million per year (Windsor Task Force 2002, KPMG 2002). These costs were for primary inspection transit times that increased by 20% after 9/11, additional overtime, reduced cycles, and additional equipment needs.

Several newspaper and trade magazine articles and/or reports have also made reference to the “costs of the border” in general but have not been specific about the types of costs they are referring to. One often cited statistic is a pre 9/11 quote from the Canadian Manufacturers and Exporters Association (Trickey 2001) which suggests that the costs of the border result in an average 6% increase in the cost of Canadian manufactured goods, with some industrial sectors facing additional costs of 13% for border crossing delays and regulations. In another pre 9/11 quote, former Prime Minister Brian Mulroney suggested that the “cost of crossing the border is at least C\$30 billion per year to businesses in both countries” (MacDonald 2001). A similar study by the Manufacturers Alliance in the U.S. found that paperwork and inspection costs already add up to 13% to the cost of goods moved across NAFTA borders, and that longer delays since 9/11 are adding another 3% (Mazner 2001). Another estimate of border crossing costs is included in a May, 2002 report to the Canadian Parliament’s Standing Committee on Foreign Affairs and International Trade. This report by Dr. Alfie Morgan for the Windsor Chamber of Commerce estimates that removing remaining tariffs, reducing the needs for inspection at the border, and reducing NAFTA paperwork would reduce costs by some 2-3% of NAFTA trade (Morgan 2002). Finally, according to a study cited by Michael Hart, a Carleton University trade policy analyst, customs clearance and compliance is costing consumers a hidden surtax of 5-7% (Macdonald 2002). However, none of these sources seem to have conducted a detailed review of costs. Instead, most of these quotes on border costs seem to represent rough guesses and do not involve extensive research efforts.

In order to develop a detailed cost analysis the research reported on here sought first to identify the types of border cost impacts that affect the economy, and then to develop high, medium and low estimates of those costs. Interviews, site visits and review of numerous reports identified both macro indicators of border related impacts, and specific categories of actual costs. The following sections review these macro impacts first, and then the detailed cost categories and actual estimates of border cost impacts.

MACRO INDICATORS OF BORDER COSTS AND IMPACTS

Several macro indicators of border related impacts have been identified. These macro indicators relate to the drop-off in traffic levels since 9/11, the relationship of cross-border freight rates to U.S. domestic

rates of an equivalent nature, and the border crossing planning time being assumed by third parties and carriers.

Changes in Border Trade and Traffic

One indicator of the impact the border has, which relates specifically to the events of 9/11, is the level of cross-border Canadian land based exports and traffic to the U.S. As indicated earlier in the paper in Figure 1, cross-border Canadian land based exports to the U.S. in the nine months following 9/11, as compared to the same 9 months pre 9/11, were down 10.8%, despite U.S. industrial production being down by far less, and U.S. auto production actually increasing 4.2%. This decrease in imports to the U.S. may be due to several factors but it clearly is due at least in part to the perceived and actual transit times and uncertainty related to border crossings. This reduced level of Canadian exports to the U.S. has significant impacts not only in Canada, but also in the U.S., where companies are now forgoing productivity benefits that accrued from these imports. These losses in productivity benefits and their cost impact are estimated in the following section on detailed cost impacts.

Another indicator of a border impact from the 9/11 events relates to the reversal of the decade long trend in cross-border truck traffic growth rates since 9/11. As shown in Table 1, between 1984 and 2001, border-wide two way truck traffic grew at an annual rate of 7.2%. Truck traffic into the U.S. alone grew at a similar rate. However, when the nine months post 9/11 are compared to the same 9 month period pre 9/11 the data reveals a 2.2% decline in truck traffic into the U.S. border-wide. While traffic declines were at a slower rate than would be expected by the level of trade fall-off, this decline in truck numbers does represent a significant impact resulting from the border. Interestingly, auto traffic into the U.S. was down by some 14.5% for the same pre and post 9/11 nine month comparison period, mostly by same day travelers. However, because 1 night plus trips with larger per trip expenditures remained unchanged, the level of spending by U.S. and Canadian travelers in each other's countries remained unchanged countrywide (Statistics Canada 2002). None-the-less, border communities such as Niagara Falls, Windsor and Blaine, Washington, which rely extensively on same day travelers, likely suffered significant declines in cross-border expenditures.

Cross-Border Freight Rates

A number of interviews resulted in information indicating that cross-border trucking freight rates are considerably higher than would be the case for similar domestic U.S. moves (Freight Carriers Association of Canada 2002, Overland 2002, Liberty 2002, Holland 2002, Yellow Freight 2002, Reimer Express 2002, and Con-Way 2002, Western Logistics 2002). While there are several reasons for these higher rates, including historical practice and the overall supply demand relationship, interviewees suggested that one of the key reasons relates to border crossing transit times, uncertainty about border crossing times and costs, and the costs of border related administration and information systems support. How much higher are cross-border rates? The Freight Carriers Association of Canada suggested cross-border rates are 10-15% higher than comparable domestic rates. However several carriers indicated their cross-border rates are 20-35% higher than domestic U.S. rates, with the lowest suggested rate premium for cross-border freight being 10%. It is also important to note that several carriers charge a border crossing premium routinely, and/or wait time at the border. For instance, LTL and Roadway subsidiary Reimer Express charges a \$20 per consignment fee for all cross-border freight (Reimer

Express Interview 2002). Con-Way Transportation has an \$8 surcharge (Schulz 2002). These two carriers alone estimate border crossing administration costs of US\$25 million.

Minimum, midrange and maximum estimates of cross-border freight cost penalties are estimated to range from US\$.94 billion to US\$2.35 billion with a midrange estimate of US\$1.59 billion. These estimates start with the value of cross-border trade moving by truck, and assume typical domestic freight rates as a percentage of these trade values equal to 4-5% depending on the scenario. These freight cost percentages are based on published data from Herbert W. Davis and Company (2002). Penalty costs of 10, 15, and 20% on top of these typical domestic freight estimates are then assumed for each of the respective scenarios. Appendix VI addresses these calculations and the rationale in more detail.

Planned Border Crossing Times

Another major macro impact of border transit time and uncertainty relates to the time that shippers, 3PL's, and carriers assume that border crossings will take, regardless of how long it will actually take. Border crossing transit time uncertainty, and the penalties that consignees such as the auto companies and mass merchants charge for deliveries that miss delivery windows, have led both for-hire carriers and private fleet managers to assume a generous amount of time for border crossing activities, regardless of actual experience. This assumed route time, at least for a significant percentage of truck movements is in effect lost time because the operator cannot effectively redeploy the truck if the border crossing time in fact ends up being far faster than assumed. Long before the actual move carriers have made route planning assumptions about the number of stops that can be made by one truck given the assumed border crossing time and have deployed assets and manpower accordingly.

In order to calculate the extent of this planned border crossing time the methodology starts with the number of trucks crossing the border per year, and assumes, depending on the scenario, between 40-60% of these trucks are subject to route planning and are not able to recoup the assumed time even when actual crossings take less time than assumed. Appendix VI details these calculations and elaborates on the issue. The calculations next assume a border crossing time to determine the total number of planned border crossing hours. This assumed time ranges from 1.5 to 2.0 hours based on the typical two hour assumed time that almost all third parties and carriers indicated they assumed (Innovative Logistics 2002, Mercer Trucking 2002). While two hours was the most typical response, several shippers, such as Accucamps Manufacturing (2002) in Canada, and Lamko Plastics (2002), indicated they assume 4-6 hours because of the extremely time sensitive nature of their deliveries. In order to finalize the cost estimates, a cost per hour of US\$150 was assumed. This hourly cost is based on the value used in a recent FHWA report that suggests fully allocated costs for planned transit time range from US\$144-192 per hour (Maring and Lambert 2002 and ICF Consulting 2002). The reader should note that this hourly cost for planned transit time is used throughout the next section which examines detailed cost impacts of the border even though the authors of the referenced papers state that unplanned delay time costs are actually in the range of US\$371 per hour. Based on the US\$150 hourly cost, and the above calculations, the researchers estimated the cost of "planned" border crossing time at US\$1.20 to 2.41 billion with a midrange estimate of US\$2.00 billion.

While these macro indicators suggest the border has a significant impact on costs, the actual categories of detailed border transit time and uncertainty costs, and other border related costs, have not yet been examined. In the following section these detailed costs are identified and estimated.

DETAILED COST ESTIMATES

This section first reviews the categories of cost impacts that were developed following site visits and interviews. The categories are organized into those related to transit time and uncertainty, and those that are of a more general nature. The first subsection also provides a summary of the total costs that have been estimated, with breakdowns by category, and the percent of trade that these costs represent. A second and third subsection reviews the calculation of the detailed costs for each cost category.

Summary of Cost Categories and Overall Impact

As indicated above, two broad categories of costs were identified. These broad categories are transit time and uncertainty related costs, and other more general border related costs. Within each of these categories costs were further subcategorized in terms of whether the cost related to carriers, manufacturers, or FIS. Tables 2 and 3 summarize these cost categories and the detailed cost impact items in each category, and provide a summary of the cost estimates at a minimum, midrange, and maximum level. More detailed discussion and calculation tables for each specific cost impact can be found in Appendix VIII.

Total costs to the U.S. and Canadian economies for the present border management system and trade policies are estimated US\$7.52 to 13.20 billion, with a most likely cost estimate of US\$10.3 billion. These impacts relate to specific costs to carriers and manufacturers resulting from border transit times and uncertainty, other border related costs borne by manufacturers and carriers for duties, broker fees, customs administration, etc., and costs for inspection staffs borne by the two governments. The total costs represent 2.70% of merchandise trade totaling US\$382 billion in 2001. After adjusting out non-truck related costs, the total border costs related to trucking are estimated at US\$9.45 billion at the midrange, or some 4.02% of total truck trade totaling US\$270 billion in 2001. In addition to these quantified costs, the report examines a number of societal impacts of the border related to congestion, environmental issues, truck safety, and the need for immediate investment dollars. These societal costs are detailed in the latter sections of Appendix VIII, Part C.

The transit time and uncertainty related category cost estimates ranged from US\$2.52 to US\$5.27 billion with a midrange estimate of US\$4.01 billion. These costs represent 1.05% of total merchandise trade, and after adjusting out non truck related costs, represent 1.58% of truck borne trade. The other border related cost category of costs were estimated at between US\$4.99 to US\$7.92 billion with a midrange estimate of US\$6.28 billion. At the midrange these costs represent 1.64% of total U.S.-Canada trade, and adjusted to eliminate non-truck related costs, represent 2.44% of total truck borne trade.

Transit Time and Uncertainty Related Costs

Table 2 summarizes the transit time and uncertainty related cost impact categories that were identified during the literature review, site visits, and interviews. The cost categories that are detailed in this section relate specifically to impacts resulting from transit times and uncertainty about transit times, and

affect carriers, manufacturers and personal travelers. These cost categories and their midrange cost estimates are as follows:

Transit Time Uncertainty Related Costs

Carrier Related

Primary Inspection Transit Time	US\$324.2 Million
Secondary Yard Processing Time	755.4
Excess Plan Time (over and above Primary and Secondary Time)	416.4
Reduced Cycle and Other Related Costs	120.7
Driver Documentation/Fax Time	<u>250.7</u>
Carrier Subtotal	1867.4

Manufacturer Related

Manufacturer Lost Sourcing Productivity Benefits	1530.0
Extra Inventory Carrying Costs	<u>458.0</u>
Manufacturer Subtotal	1988.0

Personal Traveler Related	<u>159.0</u>
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Transit Time/Uncertainty Related Subtotal	<u>US\$4014.4 Million</u>
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Carrier Related Costs

For carriers, the primary source of extended transit time relates to backups at primary inspection stations, and time spent at secondary inspection yards. The primary and secondary times carriers experience are estimated later in this section. These transit times, and uncertainty about the extent of transit time results, as discussed above, in carriers building excess border crossing time into their route planning, and this excess time is often lost time that cannot be productively used. As such the excess time over and above the actual transit time becomes a cost impact that can be estimated. At the same time, when not enough time is assumed for the border crossing, deliveries are late, exchanges at terminals may be missed, and while the research team was not able to quantify these specific late arrival costs, they can be significant. Truckers also experience a number of costs related to the reduced number of cycles they can make in a given day, including the need for additional equipment and drivers to accomplish a set number of deliveries. Carrier drivers also spend considerable time preparing border crossing documentation and faxing documents ahead to brokers. Finally it should also be noted that personal travelers experience extended transit time as well, and these costs are also estimated later in this section. Details on all these costs and their calculations can be found in Appendix VIII, Part A1 .

The actual level of transit time and uncertainty about border crossing times, and more importantly, perceptions of such times by buyers, can have a significant impact on the level of cross-border sourcing, and the level of inventories that supply chain managers feel are necessary to support their operations. Reduced cross-border sourcing that is due to border concerns, leads to foregone productivity benefits that would have otherwise been obtained and imposes a cost on the economy that is estimated later. The impact of additional inventory investments are also estimated later in this section.

Primary Inspection Transit Time Costs

For carriers the total midrange cost impact is estimated at US\$1.867 billion using the hourly truck cost of US\$150 discussed in the last section. Primary inspection booth transit time (backup) costs were estimated to total US\$324.2 million in both directions of travel at the midrange scenario. Table 4 summarizes both primary and secondary costs for each direction of travel for trucks. Secondary yard processing times will be addressed following a discussion of the methodology for estimating primary inspection transit time. The primary inspection transit time costs were estimated by using a comprehensive sample of May 1 to August 30, 2002 daily transit times maintained by Canada Customs (Canada Customs Border Transit Time Archive 2002). This sample has not previously been available to researchers. Canada Customs inspectors at some 20 key crossings estimate and report backup times in each direction for both cars and trucks to a central archive every three hours. The average primary inspection transit times for each of the key crossings in the archive were then used as a representative sample of average primary inspection transit time and multiplied by the post 9/11 annualized traffic at that crossing to arrive at total primary inspection transit hours for that crossing for a one year time period. This procedure was done separately for cars and trucks in each direction of travel for each key crossing and for the total of all other crossings in order to arrive at a border-wide estimate of total transit hours related to primary inspection.

The border-wide primary inspection transit time for trucks is summarized by crossing in Appendix VII. This data includes a summary of the times, and detailed data on each key crossing showing average, minimum and maximum primary inspection transit times for the full summer sample period, and similar information for each of the six measurement points during the day. Data for both entry to the U.S. and entry to Canada is shown in the Appendix. Following are some of the full summer sample, and specific time of day, average primary inspection transit times (backup times) for selected crossings, for both trucks and personal vehicles:

– Detroit Ambassador -	Commercial entering U.S. –	28.82 minutes
– Pacific Highway -	Commercial entering U.S. -	15.09 minutes
– St. Stephen – Calais -	Commercial entering U.S. –	14.04 minutes
– Lacolle – Champlain -	Commercial entering U.S. -	14.20 minutes
– Sarnia Blue Water-	Commercial entering U.S. –	11.69 minutes
– Blaine Peace Arch -	Personal entering U.S. -	22.79 minutes
– Pacific Highway -	Personal entering U.S. -	16.39 minutes
– St. Stephen – Calais -	Personal entering U.S. -	14.05 minutes
– Detroit Ambassador -	Personal entering U.S. -	10.83 minutes
– Blaine Peace Arch -	Personal entering Canada -	10.39 minutes

The following data from the archive shows average primary inspection transit times (backup times) for selected times of day. Again both trucks and personal vehicle data is shown.

– Detroit Ambassador -	Commercial to U.S. 9:00PM - 40.57 minutes
– St. Stephen - Calais -	Commercial to U.S. 3:00PM – 26.12 minutes
– Pacific Highway -	Commercial to U.S. 3:00PM - 23.01 minutes
– Lacolle- Champlain -	Commercial to U.S. 9:00PM – 21.44 minutes
– Blaine Peace Arch -	Personal car to U.S. 6:00PM - 36.68 minutes
– Pacific Highway -	Personal car to U.S. 9:00PM - 27.78 minutes
– St. Stephen – Calais -	Personal car to U.S. 3:00PM - 26.21 minutes
– Detroit Ambassador -	Personal car to U.S. 9:00PM - 16.65 minutes

At the Ambassador Bridge, the busiest commercial traffic entry point in the U.S., commercial primary inspection transit times (backup times) for entering the U.S. averaged 28.82 minutes in the summer of 2002. The worst time of day for entry to the U.S. was at 9:00PM, when the average backup time was 40.57 minutes. However there was a great deal of variability, with backup times on many days reaching 1-2 hours at various times of the day. These primary inspection transit times cause major backups on city streets and have caused an outcry in Windsor, with federal and provincial political leaders making almost weekly pronouncements on efforts to reduce the impact. These Windsor efforts have continued even though the cause of backups is primarily related to the number of available U.S. Customs booths and the staffing of those booths.

Secondary Yard Processing Costs

A second category of carrier transit time relates to time spent in secondary inspection yards for completion of paperwork and occasional inspections. While 10-40% of all trucks, depending on the crossing, direction of travel, and truck type; must enter secondary to visit brokers or to clear paperwork with Customs staff, just some 1% of vehicles are actually physically inspected with some of their contents removed. The costs of these secondary processing times on carriers is estimated at US\$755.4 million at the midrange, with the average truck spending a little over an hour in secondary. See Table 4 for details by direction. In addition, see Appendix VIII, Part A1 for discussion and the calculation data for this cost impact. The secondary yard processing cost estimates are based on dozens of interviews with Customs agencies and carrier management and drivers, and observation at key crossings (Carrier Interviews 2002). The estimates are produced for each individual key crossing and then summed. For each crossing the percent of trucks that enter secondary annually was estimated and multiplied times the annual truck volume to determine the number of trucks that enter secondary in a year. For each crossing a minimum, midrange and maximum scenario of the number of minutes spent in secondary was then estimated based on the referenced interviews. These estimates ranged from 45 to 105 minutes per truck depending on the crossing and scenario. While these times represent the average period in secondary, it is important to note that LTL's with multiple consignments almost all go to secondary, and that 10-20% of the time they may be in secondary for anywhere from 2-10 hours. This variability leads to a great deal of uncertainty.

Excess Route Planning Time Costs

Another major carrier cost relates to route planning times that are typically assumed at 2 hours, even though the actual combined primary/secondary crossing time may be considerably less. None-the-less, this excess planned time is in effect “lost” in many cases, thereby imposing an additional cost on carriers that end up needing more routes, drivers and equipment than would have been the case if actual transit times would have been known. Because a portion of this two hour assumed crossing time cost has already been accounted for in the actual primary and secondary transit time costs discussed above, only the net “excess” time cost is reported here. These unused plan time costs were estimated at US\$416.4 million. This cost was calculated by first assuming that between 40-60% of trucks assume a border crossing time, and then multiplying times an average planned time of 1.5-2.0 hours to arrive at total planned time. The next step was to subtract the actual calculated primary and secondary transit time estimate for each of the three scenarios. The resulting “excess” plan time was then costed out at the hourly rate. Finally, it was further assumed that 35-45% of this excess planned time cost was actually non-recoupable. See Appendix VIII, Part A1 for more discussion and calculation details.

Other Carrier Costs

Two other cost categories for carriers relate to reduced crossing cycles and related costs, and driver time for documentation and faxing of paperwork to brokers. For reduced cycles and related costs, the calculation assumed, depending on the scenario, that between 7-12% of truck freight billings at domestic like rates incurred these kinds of costs. The midrange estimate for these costs was US\$120.7 million. Reduced cycle costs occur because carriers cannot make as many moves across the border as they would be able to absent the border. Other costs relate to driver-out-of-service costs, missing exchanges, warehousing costs for missed deliveries, etc. The calculation assumed, depending on the scenario, that a freight cost penalty of 10-14% would be incurred for these types of costs. A final carrier cost related to transit time and uncertainty is the time involved in preparing documentation and faxing paperwork to brokers. This cost was estimated at US\$250.7 million at the midrange. The documentation relates to preparation of manifests and other customs paperwork, and the need to fax paperwork ahead in order to avoid the need to enter secondary yards. A far greater percentage of shippers and carriers are trying to use customs systems such as Canada’s Pre-Arrival Review System (PARS) and the U.S.’s Pre-Arrival Processing System (PAPS) that allow for clearance at primary given the uncertainty over time it will take to get into and out of secondary customs and broker offices. Depending again on the scenario, it was assumed that between 20-30% of truck movements incurred these kinds of expenses. It was further assumed that a driver time commitment of between 20 to 40 minutes, depending on the scenario, was required. Again, Appendix VIII, Part A1 contains a detailed discussion of each of these cost categories, and material on the cost calculations.

Manufacturer Related Costs

Manufacturer cost impacts that result from uncertainty in the border crossing time were estimated to range from US\$1.24 to US\$2.69 billion with a midrange estimate of US\$1.99 billion. Two cost impacts were estimated – for lost productivity and for higher inventory carrying costs.

The first of these impacts is for manufacturers who suffer reductions in productivity because of reduced sourcing from Canada. Appendix VIII, Part A2 provides additional discussion on the rationale behind

the calculation approach. Lost productivity benefits are estimated at US\$1.53 billion at the midrange for a 12 month year. The calculation is based first on the annualized declines in Canadian sourcing observed in the first nine months following 9/11, less the reduction that would be expected as a result of lower U.S industrial production. This net reduction was then multiplied by a lost productivity factor of between 7-13%, and an average 10%, depending on the scenario, to arrive at the overall loss in productivity resulting from less Canadian sourcing. These reductions in Canadian sourcing are thought to be at least in part due to buyer perceptions about the level of border transit times and uncertainty on the border now, and perhaps also reflect buyer concerns with possible levels of transit time and uncertainty in the future. Reduced sourcing may also be due to concerns about greater U.S. Customs scrutiny of paperwork and perceptions about possible upcoming requirements for greater security documentation.

The second category of manufacturer impact relates to higher cross-border supply chain inventory levels and the resulting increase in inventory carrying costs (ICC), and was estimated at US\$458.0 million. This calculation begins with overall U.S.-Canada trade and calculates what 1 day of inventory would represent. The three scenarios then assume an extra 2, 4 or 6 days of inventory supply to deal with cross-border uncertainty. An 18% ICC is then assumed to obtain the dollar ICC impact. The extra days supply estimate is based on many interviewees (Carrier and 3PL Interviews 2202, Manufacturer Interviews 2002) suggesting that small increments of additional inventory have been added to the supply chain. In addition, several articles that were reviewed suggested that additional inventory would be a prudent step for manufacturers to take to protect their cross-border supply chains from disruption due to crossing time variability (Strong 2001, Strong 2002, Cooke 2002). Examples of extra inventory related to a produce supplier that had to add 12 hours supply or C\$350,000 per year because of the need to load trucks the night before instead of the morning of delivery, to auto suppliers that increased their lead times by some 2 hours (Masstranarti 2002, Anonymous 3PL's 2002). While these increases in ICC are fairly minimal, and nowhere near what some were predicting immediately following 9/11, the research team none-the-less believed that there were indeed some penalty ICC costs incurred due to border uncertainty. See Appendix VIII, Part A2 for discussion and calculation details.

The final cost category is for primary transit times for personal travelers and is estimated at US\$159.0 million. See Appendix VIII, Part B for details of these costs and calculation approaches.

Other Border Related Costs

Table 3 summarizes the costs for the other border related category. These costs include those for impacts related to customs administration, brokerage costs, duties, etc., and affect carriers and manufacturers. In addition, federal inspection services (FIS) staff costs are also included in this section. Following is a summary of the cost categories and mid-range cost estimate for each:

Other Border Related Costs

Carrier Related

General Border Administration	US\$200.0 Million
Transportation Cabotage Regulations	<u>150.0</u>
Carrier Subtotal	350.0

Manufacturer Related

Brokerage Costs	462.9
Border Duties, Fines and Fees	1605.1
Customs Administration	<u>3290.0</u>
Manufacturer Subtotal	5358.0
Federal Inspection Services Staff	<u>571.5</u>
Other Border Related Costs Subtotal	<u>US\$6279.5</u> Million

The other border related costs include those related to compliance with trade policies, and administration of trade and immigration policies by the government. These costs are estimated to range from US\$4993.3 to US\$7919.4 million with a most likely midrange estimate of US\$6279.5 million.

Carrier Related Costs

The carrier related costs that were estimated relate to compliance with customs administration requirements, and compliance with continuing cabotage restrictions. Appendix VIII, Part D1 includes material on each of these costs and the calculation approach. Total carrier costs were estimated at US\$350 million. Carrier customs administration costs were estimated at US\$200 million and relate to headquarters planning and oversight, staff and expenditures for management information systems support, headquarters staff for processing customs paperwork, field staff at border crossings to facilitate driver transit, and dispatcher time for resolving border related delays and developing work around fixes (Carrier Interviews 2002). One example of such costs includes the US\$15-20 million spent by Con-Way Transportation to implement new border security related requirements alone (Schultz 2002). Another example includes the local agents that carriers like Overland and Reimer Express keep in place at major border crossings in order to help their drivers (Carrier Interviews 2002). Many carriers also reported they have large border processing centers staffed with employees that work to facilitate crossings and process paperwork related to various clearance programs such as PARS or PAPS.

A second category of carrier costs relates to cabotage restrictions that Canadian carriers face when operating in the U.S. Specifically, U.S. immigration and customs rules continue to make it difficult for Canadian drivers to make point to point moves wholly within the U.S (FMCSA 2002, Barnes 1998, Barrett 1998). While cross-border moves into the U.S. are legal, and cross-border loaded moves back to Canada are legal, the Canadian driver cannot be used to make a move wholly within the U.S. except under certain conditions. Nor can the Canadian driver solicit for loads back to Canada while in the U.S. – any return load must be pre-arranged. These restrictions have had an effect on drop and hook operations, repositioning moves in the U.S. (allowed by Customs but not INS so not allowed), and have even had the effect of making cross-border intermodal operations more difficult. For instance a driver cannot reposition an empty trailer unless he/she entered with or departs with the trailer.

The costs are estimated to range from US\$100.0 to US\$333.3 million, with a most likely estimate of US\$150.0 million. One large Canadian LTL estimated that Canadian carriers have cabotage costs of US\$333.3 million, and this estimate formed the upper limit of our cost range (Carrier Interviews 2002). This carrier indicated they themselves had costs of US\$100 thousand for one customer alone. Several carriers also explained how the rules prohibit them from making repositioning moves away from the border that would give them an opportunity to obtain a return load to Canada. As a result they return empty at a considerable cost penalty. In another case a manufacturer in Canada reported on how they sometimes have to hire for-hire U.S. carriers in the U.S., when their private fleet could have made movements of their product in the U.S. in conjunction with movements they had to make anyway in order to pick up a return load to Canada (Lamko Manufacturing Interview 2002). One last example relates to how cabotage restrictions have complicated Canadian Pacific's Xpressway Service from Montreal and Toronto to Detroit (Canadian Pacific Interview 2002). For hire trucking companies that have placed their trailers on the train for delivery to Detroit have sought to use their Windsor, Ontario terminal equipment and drivers to pick up these trailers and complete the delivery to say Lansing, Michigan. However, because U.S. INS considers the move from Detroit to Lansing to be a domestic one, rather than a continuation of an international move from Toronto, the use of Canadian drivers constitutes a cabotage violation. See Appendix VIII, Part D1 for details.

Manufacturer Related Costs

Manufacturer related costs are estimated at US\$4340.4 to 6375.2 million with a most likely estimate of US\$5358.0 million. These costs relate to brokerage fees, border duties and fees, and customs administration. Detailed information on each of these cost categories, and calculation details, can be found in Appendix VIII, Part D2.

Brokerage costs are estimated to total US\$462.9 million for entries to each country on goods originating in the other. While it proved impossible to develop estimates of these costs from brokerage associations, interviews with individual brokers allowed for a rough estimate of likely costs (Broker Interviews 2002, Trade Association Interviews 2002). The calculation approach was to estimate the number of entries to each country based on information from customs agencies, and then to estimate an average cost per entry based on indications from a number of brokers. See Appendix VIII, Part D2 for details.

Despite NAFTA and the earlier U.S.-Canada Free Trade Agreement, there is still a significant dollar value of duties paid to the two governments by firms in the other country. These duties are often for goods that are non-NAFTA conforming and therefore not eligible for NAFTA duty treatment. Alternatively, it is not at all uncommon for firms to simply pay the non-NAFTA duty in order to avoid the complexities of completing paperwork on rules of origin (Broker Interviews 2002). In addition, there are many goods that are subject to dumping or countervailing duties. There also are a variety of fees that must be paid, and occasional fines for non-compliance.

Efforts to quantify the level of these duties proved to be very difficult. Repeated requests to a variety of government agencies in each country for information on the level of duty payments proved unsuccessful (Duty Related Interviews With Government Agencies 2002, Broker Interviews 2002, Trade Association Interviews 2002). As such, an estimate of the level of duties had to be calculated. For entry to the U.S., this estimate was based on data provided by U.S. Customs on the level of 2002 duty collected at northern ports – for imports from all countries by all modes including air (U.S. Customs 2002). This value of US\$366.9 million was reduced by an estimated amount in each scenario to reflect our best

judgment of the percent of this total that would relate to Canadian imports. These estimates ranged from US\$200-300 million. In addition, an estimate of new softwood lumber duties was made given new countervailing and dumping duties. This duty was assumed to apply to 50-70% of imported softwood lumber, at the 27% rate (P-I News Wire 2002). Additional negligible costs for fines were added given data received from U.S. Customs (U.S. Customs 2002). Finally an estimate of truck fees for entering the U.S. was calculated. The calculation of duties for entry to Canada was based on information received from Canada Customs indicating that C\$2.9 billion was collected in total from all source countries. Given this information, it was assumed that the duties related to imports from the U.S. ranged from US\$300-400 million. The above calculations resulted in a midrange estimate of total duty payments equaling US\$1605.1 million. See Appendix VIII, Part D2 for details.

A third category of manufacturer costs relates to administration of customs requirements on trade between Canada and the U.S. These costs, which include both Canadian and U.S. manufacturers and other importer/exporters such as retailers, were estimated to range from US\$2.63 to 3.95 billion with a most likely estimate at the midrange of US\$3.29 billion. These costs are for both in-house and outsourced services related to customs administration, and for management information systems (MIS) support of the customs administration process. Specific activities relate to administration and support of functions such as planning for participation in various customs security/trade expediting programs, preparation of customs paperwork, oversight of brokers, day to day efforts to rectify customs related problems, and MIS support activities to allow for real time integration and communications between FIS, brokers, suppliers and customers. In order to calculate these costs it was assumed that large and firms have somewhat different profiles. For the top 100 firms, that account for some 30% of all U.S.-Canada trade (Macdonald 2001), it was assumed that each firm spends between US\$5-10 million on customs administration, or .4-.9% of sales (Manufacturer Interviews 2002, Broker Interviews 2002). For smaller firms that account for the bulk of trade flows, it was assumed that .8-1.1% of sales was spent on customs administration (Manufacturer Interviews 2002, Broker Interviews). At the midrange these costs total US\$3.29 billion. See Appendix VIII, Part D2 for details of these calculations. It should be noted that these costs are expected to increase significantly if proposed advance notices of 4-24 hours are required before goods arrive at the border, and/or if very detailed identification of goods is required on paperwork.

Federal Inspection Services Staff Costs

A final category of costs relates to the amount spent by federal governments for Customs and Immigration staff. While there are other types of federal inspections services (FIS) agencies, this analysis is limited to these functions, and is further limited to only inspector staff costs and does not include other support expenditures. The calculation approach was to first estimate the number of Canadian and U.S. staff under each of the three scenarios. For the minimum level, existing staff levels were used. For the midrange estimate, appropriated staff levels were used, and for the upper end scenario authorized staff levels were used (FIS Staff Levels 2002). The cost of each staff person was estimated at US\$100,000 on the U.S. side, and at US\$80,000 on the Canadian side. The resulting estimate is that FIS costs are in the range of US\$452.9 million to US\$960.9 million, with a midrange estimate of US\$571.5 million. See Appendix VIII, Part E.

CAUSES OF LONG TRANSIT TIMES/UNCERTAINTY AND POSSIBLE SOLUTIONS

This section first examines the causes of long transit times and uncertainty. The second subsection then discusses some possible short/medium term and long term approaches to reducing transit times and uncertainty.

Causes of Long Transit Times And Uncertainty

From a supply chain management logistics perspective, the biggest issue on the U.S. – Canada border is uncertainty over the amount of time required to complete a crossing, and the costs of complying with customs and immigration regulations and security provisions. In terms of transit times, the speed of crossing is important, however, far more important is a reduction in uncertainty over crossing times. The level of certainty is critical because whatever the crossing time, logistics planners can design a system that will operate effectively. Inventory planning and carrier route planning is based on crossing times that are consistent and that can be relied upon. Uncertainty causes planners to build in excess capacity, inventory and crossing time that has a cost. More importantly, it may cause commercial buyers to be cautious about sourcing goods cross-border, depriving their companies of potential productivity enhancing benefits (The Windsor Star 2003). When the actual crossing time exceeds the planned time, delivery commitments are affected, truck and driver schedules are disrupted, returnable containers may end up out of position, assembly plants can run out of inventory, and management time must be spent on corrective actions to get trucks and drivers repositioned. As such, it is critical that a level of certainty be brought to the entire border crossing process.

Specific Causes

Each border crossing, and the border crossing process, is in effect a small system comprised of several components. The system is only as good as its weakest link. As such, the various components of the system must be examined to determine their impact on total crossing time, and their impact on the degree of uncertainty. The components of the crossing include those related to both primary inspection transit, and those related to secondary processing. The key components or processes in the crossing system include those related to:

- Ingress road speed and reliability
- Toll booth processing capacity
- FIS exit check capacity
- Crossing roadbed capacity
- Primary inspection processing time capacity and plaza size
- Secondary yard diversion rates and processing capacity
- Broker processing capacity
- Preparation of documents and drivers
- Egress road speed and reliability

A failure or slowdown in any of these components of a crossing can cause long transit times and/or variations in the normal crossing time. This study, along with prior research the authors have been involved with, allows for some conclusions to be drawn about the parts of the system that can cause problems. While each crossing is unique, and it is difficult to generalize, we believe the following are key causes of longer transit times and uncertainty:

- **Ingress Roads** – Narrow 2 lane or even single lane access roads and traffic lights are not uncommon and can cause significant delay and congestion on local streets. Windsor, Ontario tunnel access at Goyeau St. is an example, as is Niagara Falls, Ontario access to the Rainbow Bridge, or access to the downtown St. Stephens-Calais crossing. Southbound and northbound I75/96 access to the Ambassador Bridge in Detroit is also an issue. Limited access road capacity and toll plaza areas can result in severe congestion on local roads in a few cases such as at the Detroit-Windsor tunnel. This problem is more severe when vehicles are being held out of the tunnel due to primary inspection backups. The resulting queues on local Windsor streets cause a great deal of congestion, delays to local non-border related traffic, and numerous incidents of road rage. Windsor police often had three to four officers stationed at the tunnel plaza access to direct and control traffic during the summer of 2002. Limited space makes correcting most of these access issues at existing crossings difficult at best. Of course the underlying cause of these kinds of problems continues to be primary inspection backups.
- **Toll Booths** – there have been some incidences of backups from toll booths. At the Ambassador Bridge, where truck toll booths are located on the U.S. side of U.S. primary inspection, trucks have been observed to occasionally backup into the inspection areas. This is not common however. Another example is at the Windsor tunnel toll booths where traffic quickly backs up onto Goyeau St.. Toll backups are typically due to efforts to hold traffic from going into the tunnel when it is backed up from U.S. primary.
- **U.S. Exit Checks** – A new phenomena which has caused some backups are the exit checks that have been going on at the Peace Bridge and Niagara Falls Bridge Authority throughout 2002 (The Buffalo News 2002). These crossings are the only ones on the northern border where permanent exit checks are occurring on a regular basis. These exit checks for cars and trucks have caused backups of traffic and increases in transit times occasionally, particularly in the case of trucks at the Lewiston-Queenston Bridge. In addition to actual backups, the checkpoints, located immediately in front of toll booths, require automobiles to merge down from as many as 10 or so toll booth lanes to two to four exit check booth lanes in a matter of a few feet. This causes a great deal of jockeying about and opportunities for road rage and minor accidents.
- **Crossing Roadbed Capacity** – Roadbed capacity is not typically a cause of transit time/uncertainty. Even the busiest crossings such as the Ambassador Bridge have ample bridge roadbed capacity. The Ambassador is at just 58% of capacity according to the company representatives. However, any activity that removes one lane from service, such as even an hours worth of construction, can lead to immediate backups due to insufficient capacity. Perhaps the biggest roadbed capacity issue is at Calais – St. Stephen where the downtown crossing has very limited capacity. The single directional lane Detroit-Windsor Tunnel is one of the few single directional lane crossings but is not thought to have a roadbed capacity problem currently. Generally, roadbed capacity is one of the least important factors in causing backups.

- Primary Inspection Booths - Interviews and observations confirm what has long been the case, that the number of open primary inspection booths continues to be the most important issue in determining the number of backup incidents, the severity of each incident in terms of backup times, and how long a given incident lasts. Specific issues relate to:
 - Number of Booths Available - In several locations the number of primary inspection booths is an issue, such as was the case at the Ambassador Bridge U.S. truck primary inspection station until an additional three booths (50% increase in capacity) were added this summer. While these booths have not been formally accepted by GSA, and may not meet all size and design requirements, they offer the opportunity to substantially eliminate truck backups from primary. Such truck backups into Windsor are by far and away the single largest cause of extended transit times anywhere on the northern border. The number of primary inspection booths is also a major issue at Port Huron for truck entry, and is an issue at times at several other crossings.
 - Staffing of Available Booths - While the U.S. has generally done a better job of staffing available booths than has been the case for many years, many backup incidents still occur when not all available booths are staffed. The length of time it takes to wind backup incidents down is also highly dependent on the response time for FIS to open additional booths. More significant backup incidents occur when time elapses before additional booths can be opened. During this project the research team observed numerous backup incidents of a half hour plus when far fewer than the total available booths were open. Other observers, such as Jim Philips of the CanAm Border Trade Alliance, have suggested that pre 9/11, half of all booths were closed at any point in time (Toulin 2002). This was repeatedly the case at the Peace Arch while observations occurred, and at the Detroit-Windsor Tunnel. Lack of staff prevents opening additional booths.
 - The other major variable affecting primary backups is the processing time per vehicle cycle. While this time had averaged 25 seconds for cars and 48 seconds for trucks pre 9/11, it now appears to average 35 seconds for cars and 70 seconds for trucks given many observations by the research team. These times have been necessary for security purposes since 9/11. Of course this relatively minor appearing change in processing cycle time per vehicle has a major impact on primary capacity. Any increases in processing times, which occurs frequently, leads to additional backups if there is significant vehicle volume.
 - A final issue related to primary is the occasional FIS inspections of trucks right in front of primary inspection booths thereby effectively closing a booth for 5-10 minutes. While these inspections sometimes occur off to the side where there is more room, these inspections were observed several times and they cause additional delays and congestion.
 - More significant backup incidents occur when time elapses before additional booths can be opened. During this project the research team observed numerous backup incidents of a half hour plus when far fewer than the total available booths were open. During many of these incidents no additional booths were opened. This was repeatedly the case at the Peace Arch while observations occurred, and at the Detroit-Windsor Tunnel. Lack of staff prevents opening additional booths.
- Secondary Yard Processing Inspection Areas – Secondary inspection space continues to be a problem at several crossings on the U.S. side. This is true at Calais, at the Peace Bridge (where there are severe space limitations), sometimes at the Ambassador Bridge (where we have occasionally observed the lot full when X-Ray operations were underway), at the Blue Water

Bridge where the U.S. plaza has insufficient space and additional on-site parking spaces have an extremely high cost, and every so often on the Canadian side of the Pac Highway crossing where U.S. bound trucks park in Canada prior to walking across into the U.S. to visit U.S. brokers.

- The fact that secondary broker facilities are sometimes some distance from the truck parking areas also adds to costs. This is the case at the Canadian secondary yard for the Ambassador Bridge where brokers are spread out over .25-.50 miles and drivers must walk to these locations, and at Pac Highway for U.S. entry where drivers must walk across the border to reach brokers.
- Auto secondary did not appear to be a problem this summer, however, any significant referrals to secondary for planned exit visa control and/or fingerprinting of certain nationals would overwhelm all crossing's U.S. auto secondary yard capacity.
- Secondary processing times can also be significantly affected by the level of FIS staff available to staff secondary windows and physical inspection areas. Significant lineups of drivers have been observed, along with drivers waiting for paperwork to be processed. The level of staff dedicated to secondary is difficult for outsiders to observe but it often does not appear to be sufficient to process the volume of drivers present in a timely way. These limitations are due to a lack of staff.
- Customs Processes/Broker Operations/Documentation Preparedness – A major cause of longer transit times relates to ongoing referrals to truck secondary on both sides. LTL carriers or others with more than three-five consignments per truck are routinely referred to secondary even if pre-clearance processes have been used. Entry to secondary for these “trap loads” leads to significant transit time increases for carriers. Programs such as the U.S. NCAP are designed to eliminate the need for entry to secondary, however, despite being much promoted as the “technology” solution to border crossings, the rate of acceptance for this program and the successor FAST program, remain unclear. It is not uncommon to see lines of 20-30 drivers waiting inside Customs buildings for access to the Customs clerical worker accepting paperwork.
- Other causes of backups relate to:
 - Broker Hours – Broker hours can be an issue at some crossings, and even if brokers are open, if qualified personnel are not available at night or on weekends when many LTL carriers cross, this can lead to additional processing time.
 - Incomplete Pre-Clearance Work - Even longer secondary processing time occurs when pre-clearance work has not been completed by brokers and drivers arrive at primary, or even worse, when there are problems with processing of entries. Additional processing time occurs when trucks are referred to secondary for actual inspection by FIS.
 - Unprepared Carriers/Drivers – There are still many small carriers that do not participate in pre-clearance programs such as PAPS for entry to the U.S. and PARS for entry to Canada. There also are many shippers/importers that do not participate in programs such as “line release,” even though they may be able to do so. These unprepared carriers cause considerable problems at crowded secondary yards and have led to pre-processing centers at the Peace Bridge for U.S. entry and an additional facility being considered for Sarnia and Windsor.
 - Importer Documentation Approaches – One cause of the large number of “trap loads,” and the need for large number of vehicles to enter secondary, is the fact that, for internal management accounting and documentation purposes, many large importers treat

multiple supplier shipments on a truck as separate entries, even though the importer could opt to treat all the consignments as a single entry. This results in more than 3 entries on the truck and a trap load condition. A major auto company and a broker, both of whom wanted to remain anonymous, indicated this is common so as to be able to track duties and other costs by vehicle and assembly plant.

Anatomy of a Backup

One of the keys to reducing backups and uncertainty is a quick response to backup incidents by FIS personnel. Once backups start, a certain “snowballing” effect takes place, congestion increases, and it often takes considerable time to wind a backup down. The following example of a backup incident from U.S. primary inspection examines the anatomy of a slowdown and provides insight into the speed with which problems can occur (the operator of the crossing asked that they not be identified):

- 7:30AM - No car or truck queues.
- 7:51AM – Breakdown in truck lane reducing available booths from 3 to 2.
- 7:45AM – Truck traffic increases from 63 per 15 minute interval to 85 per minute.
- 8:00AM – Trucks back up some 1000 feet
- 8:12AM- A third booth is opened but trucks are already backed up 5000 feet.
- 8:18AM - Fourth booth is opened. Trucks are backed up 7500 feet.

In just 27 minutes trucks backed up 7500 feet or about 75 trucks deep even though additional booths were opened up relatively quickly. With traffic control measures, trucks are held at this particular crossing, making the queue look fairly modest from the U.S. customs plaza, but diverting the backup to local streets. While this queue took just 27 minutes to develop it took until 2:00PM to clear with U.S. Customs maintaining 4 open booths. The lesson is that queues can develop very quickly, and take a long time to control.

Possible Short/Medium and Long Term Solutions

The causes of long transit times and uncertainty over crossing times are complex and solutions will require a multifaceted approach involving Department/Ministry’s of Transportation, FIS agencies, brokers, carriers and shipper/importers. Solutions also require considerable cooperation across the border between Canada and the U.S. given the fact that the problems that manifest themselves in one country are often due to problems caused, and that must be resolved in, the other country. For instance, the longest backups on the border, causing the most congestion and problems for the local community, are in Windsor. However, the primary cause of these problems is in Detroit, where there are a combination of problems relating to the number of FIS booths for trucks, and the FIS staffing of available booths. While Canada and Ontario would like to solve the problems for Windsor residents, the root cause of the problem, and the real solution, lie in the U.S.

Short to Medium Term Solutions

Short to medium term solutions revolve around FIS staff levels increases and the effective utilization of that staff, increases in FIS plaza acreage and the number of primary inspection booths, an end to FIS

policies requiring “trap loads” to routinely enter secondary once sufficient primary inspection booths are in place, improvements in ingress/egress roads, creation of off-site second stage inspection facilities, improvements in broker capacity and relationships with drivers, implementation of increased monitoring of crossings with cameras and communication of information, greater participation by carriers and their customers in various pre-clearance programs and possible requirements that carriers participate in programs allowing for routine loads to be cleared at primary, implementation of licensing programs for border carriers/drivers that would be required for border crossing privileges, and implementation of frequent traveler programs in an effective way. Each of these points is briefly discussed in the following points:

- **FIS Staff Levels and Effective Utilization** – Increases in FIS staff levels are critical given the longer processing times per vehicle that have occurred since 9/11, given additional planned security enhancements such as those requiring advance notice of goods arriving at the border, and given likely future increases in traffic to pre 9/11 levels or beyond. The process of increasing FIS staff levels is underway and will make a large contribution to reducing transit times and uncertainty. However, it will be critical that these personnel be deployed in a way that allows for quick increases in the number of open primary inspection booths as traffic levels dictate. It will also be important that staff levels be adjusted rapidly in truck secondary inspection yards so as to avoid long waits in these facilities.
- **End to routine requirements for “trap loads” to routinely enter secondary** - Once sufficient primary inspection booths are in place, FIS organizations in both countries should develop policies that will end the practice of requiring trucks with more than 3-5 consignments to enter secondary, even when they and/or their shipper/consignees are participating in programs that would otherwise allow for clearance at primary. Currently, most LTL trucks are required to enter secondary. Secure LTL’s, hauling approved shippers and importer’s goods, should be able to clear without entering secondary.
- **Expansion of plazas** - A medium term solution, and one which will be difficult to implement at many crossings given a lack of space, involves the expansion of FIS plazas so that they can accommodate more auto and truck inspection booths for inbound checks, outbound exit checks which might be required at more crossings in the future, secondary space for both autos and trucks, and dedicated approach lanes for frequent traveler and secure cargo programs. Where space permits, additional inspection booths should be put into place immediately.
- **Ingress/egress road improvements** - At several crossings, improvements in ingress/egress roads are necessary. These improvements may or may not be feasible given surrounding infrastructure, however, where possible, crossings should be linked directly to major interstates or other primary roadways. Access/egress ramps to plazas should also be upgraded from one to two lanes or beyond wherever possible. Wherever possible, traffic lights should be eliminated from key roadways, and grade separations should be put into place at key cross streets.
- **Off-site second stage inspection facilities** - Where plazas cannot be expanded sufficiently, off-site second stage inspection facilities should be considered. These facilities could be used for more detailed processing of entry/exit checks on foreign nationals, and for detailed inspection of truck cargos. Roadways between first stage primary/secondary plazas and these second stage facilities could be monitored with cameras and other measures.

- While controversial, serious consideration should also be given to off-site first stage secondary inspection yards, to joint U.S.-Canada facilities, and reverse inspections. There already is precedent for off-site secondary in Canada, such as at the Ambassador Bridge in Windsor where the off-site truck secondary is some 2 miles from the border. There also is precedent on the U.S. side for off-site secondary. For instance, at the Windsor-Detroit Tunnel, truck secondary is located some 2 miles away at the Ambassador Bridge. Joint facilities, and reverse inspections, await Canadian legislation that would allow U.S. FIS to operate in Canada on acceptable terms. The U.S. already has legislation that would allow Canadian officers to operate in the U.S. (Coalition for Secure and Trade Efficient Borders 2001).
- Broker capacity and driver relationships - A major cause of uncertainty relates to processing times for brokers at secondary yards, and the availability of broker key personnel during weekends and nighttime hours. Measures must be taken to assure that brokers provided access to scarce on-plaza facilities are sufficiently staffed to avoid routine waits for drivers, that they have sufficient expertise on site to resolve problems in a timely manner, and that they clear PARS and PAPS loads on a priority basis before drivers arrive at a crossing. In addition, crossing operators should be required to provide broker space immediately adjacent to secondary yards, limiting the walking distance required for drivers. Finally, programs need to be developed to improve communications between drivers and brokers, and to improve the working relationship between drivers and broker personnel.
- Crossing monitoring processes - A relatively inexpensive step that can be taken is to better monitor crossing and ingress/egress road conditions with camera technology. Central control room monitoring of images would allow for police traffic control personnel to be dispatched more rapidly when needed, and would help FIS better understand the extent of backups and congestion being caused by lineups at their primary inspection booths. FIS could then increase the number of open booths in a more timely manner before long backups are established.
- Carrier/Shipper/Consignee participation in “pre-clearance” programs - Many carriers and shipper/consignees do not currently participate in programs allowing for clearance at the border, such as carrier PARS and PAPS programs, other traditional “pre-clearance” programs, or newer programs such as C-TPAT or CSA, and FAST, that attempt to provide for expedited clearance of safe and secure loads. One approach is to begin requiring participation so as to assure that a smaller number of trucks must enter secondary. These latter programs try in effect to separate high risk and low risk traffic, but while touted as providing dedicated lanes for participants, at some locations it is not possible to get to the dedicated lanes on the plaza without waiting in line with all carriers on approach roads, bridges or tunnels. Operators could also require that carriers using their facility are on the PAPS and PARS programs before they can use the crossing, an option being considered at the Peace Bridge.
- The U.S. and Canada should also end immigration policies that result in entry being prohibited for those with minor misdemeanor or low class felonies. These restrictions complicate processing and really do not serve a major security interest. They also reduce the pool of available drivers for cross-border operations, leading to higher costs and less safety because less experienced drivers are hired in their place. Testimony before the Canadian Parliament’s Committee on Citizenship and Immigration (2001) indicated that 18% of U.S. drivers were not technically legal in Canada because of these rules.

- Special licensing of border carriers - Authorities could also establish requirements for carriers/drivers to be given border crossing privileges, thereby eliminating many of the smaller untrained carriers or private operators, and untrained drivers that slow the border crossing process for many, and that lead to more congestion at crossings. Such an approach might resolve major problems with untrained carriers and drivers.
- Frequent traveler programs - Frequent traveler programs have the potential to secure and frequent personal travelers across the border. Programs such as NEXUS should be activated at as many locations as possible as soon as possible. However, such programs can only be effective if plazas are big enough to give these preferred travelers easy access to inspection booths dedicated to them. At many crossings this will not be feasible unless bridges are widened and/or access roads are widened so as to provide dedicated lanes to approach the dedicated booth without waiting in line with other non-participants..

Long Term Solutions

Long term, there are two approaches to dealing with the U.S.-Canada border. One approach is to invest in sufficient new border crossings, staff and technology (Audi 2002) to facilitate trade and maintain border security. The focal point of such an approach would be a tightening of security on the U.S.-Canada border. This approach would require upwards of several billions of dollars for facilities, and ongoing FIS staff needs. While these investments could help facilitate trade, there is some question about the degree of security that can be provided on a border between two countries with this level of economic integration and cross-border trade and transportation.

Pre 9/11 many commentators indicated there was very little security on that border. For instance, pre 9/11, U.S. Ambassador to Canada Paul Cellucci was quoted as stating that, in terms of providing security on the internal border, “It’s kind of a needle in the haystack approach to think we’re going to stop these [bad] guys at the border” (Trickey 2001). Many others have commented on the difficulty of catching individuals on the border. Hart and Dymond (2002) note that “serious criminals have ample opportunity to cross the border by by-passing ports of entry with controls. A U.S. Coast Guard Commander conducting a pre 9/11 study on border security for the Council on Foreign Relations was quoted as saying that “most border control systems on the U.S.-Canada border don’t pass the giggle test (Handelman 2001). It should be noted that much of the border is essentially unguarded. Immediately after 9/11 U.S. Senator Byron Dorgan commented that “The only thing stopping potential terrorists from entering the U.S. from Canada after 10:00PM at 15 of 18 border checkpoints in his home state is an orange road pylon.” (Dawson 2001). Since then there have continued to be a number of reports questioning the level of security on the border (GSA 2003, Fox News 2002, MSNBC 2002, Audi, 2002, Detroit News Staff 2002).

Whether or not new security spending on the border, including remote monitoring systems, could truly boost security on the border is an open question. However, efforts to increase security, including various new controls on travel by non-nationals, and requirements for various advance notices of freight movements, could impede commerce regardless of the level of investment in facilities and staff at key guarded crossings. While technology is often cited as a solution that will allow for both security and free flows, it is not a given that high tech can deliver both.

A second alternative that has gained considerable attention in Canada is the concept of an “external perimeter” approach to the border between the U.S. and Canada. Such an approach would not involve a sudden movement to a new system but would instead represent movement along a continuum towards a more open border. The most advanced version of this approach would result in border inspections being conducted on the U.S. and Canada’s external borders, with a change in emphasis on the internal border to one of random inspections and post audits with severe penalties for violations of each country’s laws and/or trade policies. Such a system would of course require Canada to more closely integrate its immigration policies with those of the United States, including those related to asylum and visa waiver rules. Many other policies, although not all, would have to be more closely integrated, including those related to agriculture, food safety, health controls, etc. The external perimeter approach would also provide additional incentives for the U.S. and Canada to integrate trade business travel policies. The benefit from such an approach would be potential elimination of most of the US\$10.3 billion in cost impacts from the current system, a savings equal to 2.70% of the value of all current merchandise trade. Some have also suggested that such an approach could provide for additional security by focusing on the external border where more thorough inspections are possible, and by focusing on more effective intelligence-directed and random inspections (Canadian Parliament Standing Committee on Citizenship and Immigration 2001, Trickey 2001, Hart and Dymond 2002, Handelman 2001).

AN EXAMINATION OF THE “EXTERNAL PERIMETER” BORDER MANAGEMENT STRATEGY

The border management system in place today results in periodic backups, some uncertainty about the extent of transit times, and many other general border related costs such as those associated with customs administration. As described above, there is also some question about the ability to provide meaningful security on the border. Is there perhaps an alternative approach that would help to eliminate the cost impacts described above, while providing for similar or even better security than is provided by the current system?

One of the key options is the “external perimeter” strategy described above in the long term solutions section. Such a strategy would, over time, replace the current border management system with what some have argued would be more effective external border checks at the perimeter while reducing controls at the U.S.-Canada border. Routine checks would be replaced with random and intelligence based inspections. This strategy would place the emphasis on border security at the U.S. and Canada’s external border, and reduce the emphasis on the U.S.-Canada border itself where levels of interaction and commerce make it more difficult to provide effective security. Over the long term the result would be a system more in line with the European Union approach to control of internal borders. While there has been little discussion of such a system on the U.S. side of the border, there has been considerable discussion in Canada about the potential for an external perimeter strategy (Conference Board of Canada 2002, Hart and Dymond 2001, Dobson 2002). In fact, one recent Windsor newspaper editorial suggested the Canadian government should seriously explore a European Union style border arrangement with the U.S. (Windsor Star 2002).

The “external perimeter approach” would provide an opportunity to save much of the US\$10.3 billion in border related costs identified in this research, would minimize the need for major new investments in border crossing and FIS infrastructure, and reduce the need for additional FIS staff on the border. Such a system could also spur additional cross-border integration and could make a contribution to increasing

the productivity and competitiveness of the two economies. Some have also argued that security could actually be enhanced by focusing resources on the external border where security efforts are more realistic, and refocusing U.S. - Canada border efforts on random inspections and intelligence based activities. For instance, speaking pre 9/11 about the perimeter concept, U.S. Ambassador to Canada Paul Cellucci said “From my way of thinking, if we took the money we would have put into placing more people on the border and put it into law enforcement and intelligence, we’re going to have a much better chance of catching bad guys rather than hoping that we’re going to catch them at the border” (Trickey 2001). Hart and Dymond make a similar point in stating that “the solution lies in intelligence gathering, information sharing, and control of the external border, not in more routine U.S.-Canada border inspections” (Hart and Dymond 2002).

An external perimeter strategy would in effect acknowledge a problem with the current system, the fact that effective security is very difficult to implement given the level of economic and integration across the border, the unguarded nature of the many miles of border, and the fact that gridlock would likely develop from any meaningful level of inspections at existing checkpoints. A number of sources have called attention to this problem in recent years (GSA 2003, Hart and Dymond 2002, Fox News 2002, MSNBC 2002, Detroit News Staff 2002, Trickey 2001, Handelman 2001, Dawson, 2001, Audi 2001). Currently, primary inspections at key crossings average just 30 seconds for cars and 75 seconds for trucks based on the research team’s observations during the summer of 2002. While longer primary inspections can and do occur, any increase in the average processing times at peak periods could quickly lead to gridlock. And while inspectors have the option of referring vehicles to secondary, current auto facilities are extremely limited. In addition, truck inspections in which the back doors are actually opened are extremely rare, and inspections of rail cars and containers crossing the border are even more rare.

The current problems with border security were highlighted in a recent General Accounting Office (GSA) report, that reported on how easy it was for GSA inspectors to enter the country with falsified ID, which in one case was not reviewed, and how easy it was to simply walk across the border unchecked in one location where a park straddles the border (General Accounting Office 2003). While it was not a purpose of this study, during the course of site visits, it also became apparent that there are numerous border crossing points where one can simply walk across unchecked. In fact, at some western crossings U.S. bound truck drivers needing to visit U.S. brokers park on the Canadian side and walk across the border into the U.S. in a completely unsupervised way, and could easily continue on into the U.S. instead of returning to their trucks in Canada.

The difficulties inherent in the current system, and the potential impacts that would result from security upgrades, become apparent when one considers some of the proposed enhancements. The enhancements that have been discussed, all of which could add extensive costs and uncertainty to the system, and potentially increase congestion significantly, include:

- A recently withdrawn requirement for anywhere from a 4-24 hour pre-notification to Customs of the detailed nature of goods traversing the border. While this specific proposal by U.S. Customs was withdrawn, U.S. law requires Customs to develop an advance notice system proposal by October. Any meaningful advance notice system would have a major impact on just-in-time (JIT) cross-border supply chains that often operate in a manner that currently does not even produce a production order until 2-4 hours prior to the expected arrival of the goods on the other side of the border. The likely result of an advance notice system would be a reduction in imports and a loss of benefits that accrued from those imports. Additional costs would also be incurred

to provide information on the detailed nature of goods, something that is not currently required (Cassidy 2003). Detailed reporting could also result in a loss of more favorable non-NAFTA duty treatment applied to an overall generic description today when an importer chooses to enter goods under non-NAFTA provisions.

- Existing law (2002 H.R. 3448 – The Public Health Security and Bioterrorism Preparedness Act) in regards to the importation of agricultural and food products, which would at Section 307 require that importers provide advance notice of the nature of goods being imported. In response, the U.S. FDA has proposed a rule requiring detailed reporting of the contents of a shipment by noon the prior day. Such a policy would likely reduce the level of U.S. imports from Canada, with resulting losses of the cost of living and food quality benefits that attached to these imports. The proposed rules would also disrupt JIT supply chains and add inventory carrying costs to the system. Finally, more trucks would be needed because loads could not be adjusted to fill out empty space on a truck, and trucks would be prohibited from changing crossing locations to take advantage of traffic congestion information (Abboud 2003, Rail Business 2002).
- Existing requirements for 2004-2005 entry-exit checks of all aliens. Such a system could have major impacts on border backups (Cohen 2002).
- Existing policies which call for more extensive border checks of vehicles when the terrorism security threat levels are raised to the “orange” level (Hansen 2003). These policies could make travel at peak periods very difficult. For instance during the week of April 1, 2003, under an orange alert, trucks were backed up one to two hours on several occasions (WJR Radio 2003).
- A recent requirement for Canadian truck drivers to obtain I-94 immigration documents, and that they be presented on arrival and departure as of March 1, 2003 (Strong and Kosdrosky 3003).
- A recent agreement to tighten security on rail cars entering the U.S. from Canada, including a requirement for detailed cargo information to be provided (Nordwall 2003).

An external perimeter approach would alleviate the need to implement many of the above security enhancements on the U.S.-Canada border. Of course, such a policy would require Canada and the U.S. to harmonize some immigration policies on the scrutiny and admissibility standards of immigrants, refugees, and foreign visitors. An external perimeter strategy would also require Canada and the U.S. to more closely cooperate on immigration and customs enforcement offshore and at external borders – changes that are currently already in process to some degree. One key to being able to reduce scrutiny at the U.S.-Canada border is the ability to build a robust system of random inspections and post-audits of the companies that conduct the bulk of trade across the border, and a system of severe penalties for corporate or personal violators of each countries domestic law.

There are of course, many potential problems with such an approach. First, would Canada and the U.S. want to harmonize regulations sufficiently to allow such a system to work? Both in terms of immigration policies, labor policies, and in terms of policies related to third party nations such as Cuba. Secondly, could the “external perimeter” approach really provide an effective level of security, and could random inspection and other approaches on the U.S.-Canada border really provide a sufficient additional measure of security? A third question would relate to how U.S. guns could be kept out of Canada, how Canadian drugs could be kept out of the U.S., and how products such as Cuban cigars could be kept out of the U.S. Would strict penalties and domestic enforcement be able to control such flows? Finally, if the U.S. were to enter into such an arrangement with Canada, how would it treat Mexico?

Over the next few years, the U.S. and Canada will have to consider the long term border strategy they want to pursue. In the long term the two options are increasing the level of resources dedicated to securing this border, or moving towards a more open border with substitution of external border controls.

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